MAKURIN, P.I.; MIKHAYLOVA, V.L., inzh., retsenzent; ZIGEL', L.A., inzh., red. KNORRE, B.V., inzh., red.; KOKIN, B.S., inzh., red.

[Safety techniques in foundries] Tekhnika bezopasnosti v liteinykh tsekhakh; spravochnik. Moskva, Mashinostroenie, 1965. 307 p. (MIRA 18:9)

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

17

Synthesis of vitamin B_1 and its biologically inactive isomers. [illegible] and M. S. Zigel. *Proc. Sci. Inst. Vitamin Research U. S. S. R.* 3, No. 1, 94-7(1941).—Aneurine was obtained in 55% yield by direct condensation of its pyrimidine and thiazole components. The product was identical with natural aneurine. Two biol. inert isomers of aneurine were prepd., namely, 3-(2-methyl-6-amino-5-pyrimidyl methyl)-2-ethyl-4-methyl-5-hydroxyethylthiazolium bromide and 3-(2-methyl-6-amino-5-pyrimidyl methyl)-2,4-dimethyl-5-hydroxyethylthiazolium bromide. F. S.

COMMON ELEMENTS

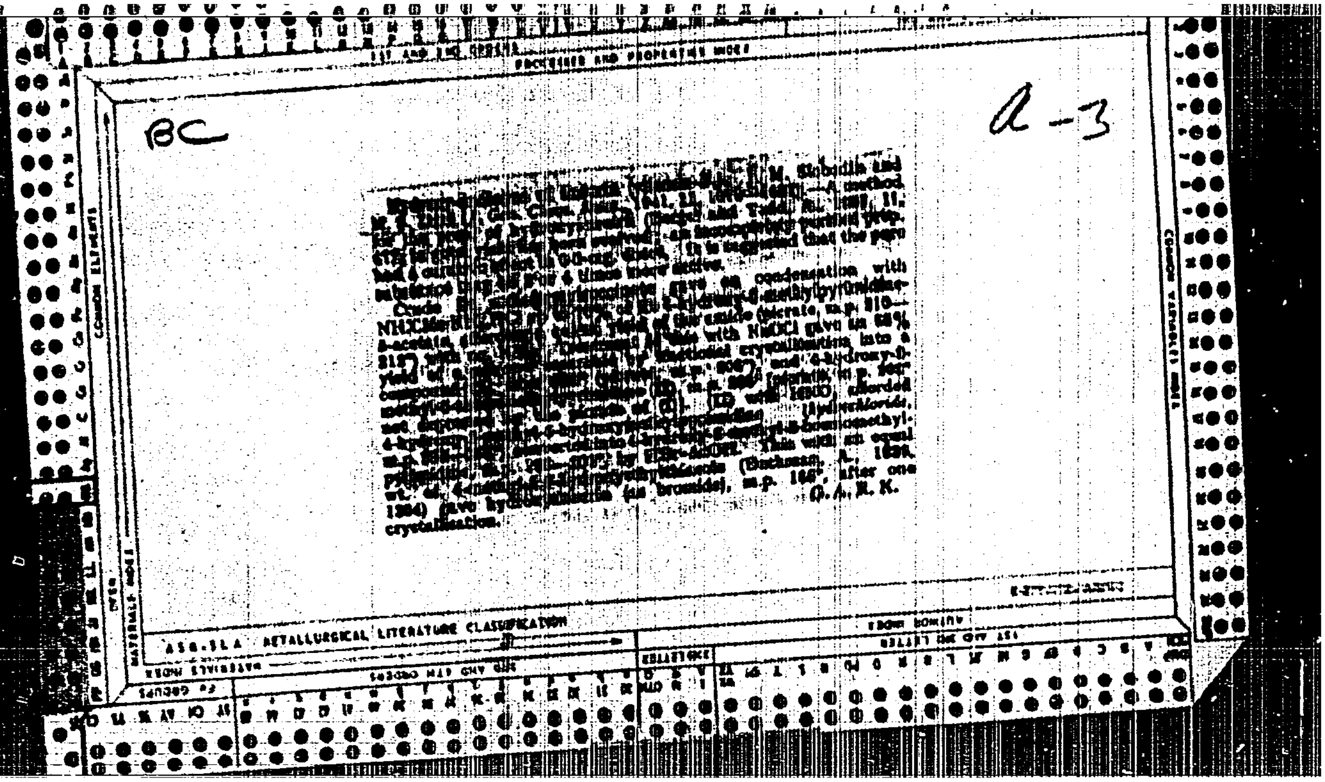
MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

AUTHOR INDEX

1ST AND 2ND LETTER

3RD AND 4TH ORDERS



1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

BC

a-3

COMMON ELEMENTS

[illegible] M. [illegible] and [illegible] —A method [illegible] Gen. Chem. [illegible] (Engl. and Trans. [illegible] 11, [illegible] purified prep. [illegible] It is suggested that the prep. had [illegible] 4 times more active.

[illegible] on condensation with [illegible] -methylpyrimidine-

Crude [illegible] picrate, m.p. 210— [illegible] NHCHO [illegible] the amide [illegible] with NaOCl gave an 68% [illegible] -acetate [illegible] crystallization into a [illegible] 215° [illegible] m.p. 208° and 4-hydroxy-5- [illegible] yield of [illegible] picrate, m.p. [illegible] compound [illegible] (II) m.p. [illegible] with HBr afforded [illegible] picrate of (I). (II) with [illegible] hydrochloride, and [illegible] 6-hydroxy [illegible] bromomethyl- 4-hydroxy [illegible] This with an equal [illegible] m.p. [illegible] by EtOH-AcOH. [illegible] (Buchman, A. [illegible] [illegible] thiazole [illegible] after one wt. of 4-methyl-5- [illegible] (as bromide), m.p. 166°, [illegible] 1384) gave hydro [illegible] crystallization. Q. A. R. K.

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MATERIALS INDEX

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

Ca

10

Vitamin B$_1$. IV. Technical synthesis of 4-methyl-5-(2-hydroxyethyl)thiazole. Ya. M. Slobodin, M. S. Zigel, and M. V. Yankshevskaya. *J. Applied Chem.* (U.S.S.R.) 16, 280-2(1943); cf. *C. A.* 38, 2004^4.—HCO$_2$Et(2 kg.) cooled to −10° is treated with 2 l. cold concd. NH$_4$OH (25%); the mixt. is kept at −10° for 4-5 hrs. and heated on a steam bath to remove volatile products; *formamide* is then collected by distn. *in vacuo*, b$_{14}$ 114°, n$^{20}_{D}$ 1.4471; yield, 1 kg. The above is treated with 400 g. P$_2$S$_5$ gradually to prevent strong overheating of the mixt., after which *thioformamide* is extd. with Et$_2$O; the solvent is distd. just previously to use; yield, 45-50%. To 1300 g. Ac$_2$O heated to 110° there is added gradually 1 kg. acetopropyl alc. (reaction temp. rises to 125°) after which the mixt. is heated for 2 hrs. at 140° and the product distd. *in vacuo*, to yield 630 g. *acetopropyl acetate*, b$_{14}$ 100-15°; in presence of 5-10 cc. pyridine the yield is increased to 1000 g. One kg. of the above in 500 cc. CHCl$_3$ at 60° on a steam bath is treated with 350 g. Br in 600 cc. CHCl$_3$, with addn. in several portions of 350 g. chalk for binding the liberated HBr; the regulated addn. takes 7-8 hrs., after which the product is washed with water, filtered, dried and freed of solvent by distn. *in vacuo*; 1250-1400 g. *bromoacetopropyl acetate* is obtained. To 1250 g. of the above, cooled in ice-water, there is added slowly a soln. of 660 g. HCSNH$_2$ in 810 g. abs. EtOH, with cooling below 60°; the mixt. is let stand for 12-16 hrs., refluxed for 1-1.5 hrs.; on cooling, the mixt. is dild. with water and extd. with Et$_2$O; the aq. layer is made alk. with 230 g. NaOH and 1650 cc. EtOH and refluxed on a steam bath for 1-2 hrs., cooled, acidified by HCl, alc. and water are distd. off *in vacuo* to 0.5 the original vol. and the residue is salted out with K$_2$CO$_3$ to yield 200-20 g. *4-methyl-5-(2-hydroxyethyl)thiazole*, b$_3$ 138-42°, d$^{20}_{4}$ 1.1984, n$^{20}_{D}$ 1.5440; *picrate*, m. 162°. G. M. Kosolapoff

COMMON ELEMENTS

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ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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3RD AND 4TH ORDERS

8 O

II R

Vitamin B[illegible] II. [illegible] M. V. [illegible] a [illegible] formation of [illegible] U. [illegible] thiazole [illegible] from [illegible] CaCO₃, which pro- Ac(CH₂)₃CHO [illegible] cludes [illegible] formation of (I). J. J. B.

COMMON ELEMENTS

OPEN

MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

AUTHOR INDEX

1ST AND 2ND LETTER

COMMON VARIABLES INDEX

S/054/60/000/02/05/021
B022/B007

AUTHORS: Kondrat'yev, K. Ya., Zigel', O. A.

TITLE: The Problem of Thermal Probing of the Atmosphere With the Aid of Photometric Data Obtained in Twilight

PERIODICAL: Vestnik Leningradskogo universiteta. Seriya fiziki i khimii, 1960, No. 2, pp. 45-48

TEXT: The main difficulties in using the photometric method at twilight for the purpose of investigating the atmospherical structure are aerosol- and multiple scattering. In the present paper the attempt was made to investigate the influence exerted by these two factors by using celestial photographs in twilight. Measurement of sky brightness at twilight was carried out in the region of Mount Elbrus in an altitude of 3700 m above sea level; this was done during the period from July to September, 1959. Fig. 1 shows the calculations of vertical temperature distribution carried out on the basis of the mean values of all data obtained. Fig. 2 shows the time-dependence of the change in brightness at twilight in the zenith. The results obtained show that the twilight-method in its usual form

✓B

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The Problem of Thermal Probing of the Atmosphere With the Aid of Photometric Data Obtained in Twilight

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B022/B007

permits only an estimation of the mean temperature values. The following persons are mentioned: T. G. Megrelishvili (Ref. 5), N. B. Divari (Ref. 8), F. F. Yudalevich (Refs. 6, 7), V. G. Fesenkov (see Ref. 5), and N. M. Shtaude (Refs. 3, 4). There are 2 figures and 8 Soviet references.

√B

Card 2/2

H/004/61/000/012/001/001
D022/D105

AUTHOR: Zigel, P., Docent

TITLE: Are there any intelligent beings on Mars?

PERIODICAL: Tudomány és Technika, no. 12, 1961, 408-409

TEXT: The author deals with the possibility of the existence of men on Mars. It is a known fact that regular dark streaks resembling a canal network cover the Mars surface. The canals are continuous, leading either into a "sea" or into another canal. It can be assumed that the whole network is fed under pressure by a mysterious installation in order to supply Mars with water. The oases in the canal network look like colonies of Mars inhabitants. In the winter these oases become paler but their cores remain visible and the possibility of these oases being towns must not be overlooked. Deimos and Phobos, satellites of Mars, revolve around Mars in an almost circular orbit, having a trajectory similar to that of the Soviet artificial satellites or space ships orbiting around the Earth. According to S. Shklovskiy the Mars satellites are more than 10 million years old. The author, however, maintains

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D022/D105

Are there any intelligent beings on Mars?

that both Martian satellites appeared on their trajectory about 100 years ago and that they were created by the inhabitants of Mars between 1862 and 1877. He supports this statement with the argument that these satellites, similar to the artificial satellites of the Earth, are continually bombarded by micrometeorites and that, therefore, in the course of several millions of years both Martian satellites would have been destroyed, particularly in view of catastrophic collisions which occur in space. In 1952, a new green patch the size of Ukraine and known as the "Laocoon-knot" suddenly appeared on the Mars surface. This patch becomes darker in color every year but maintains its contours. All dark spots on Mars are supposedly vegetations. It is baffling that a large area of the Martian desert becomes green and that this assumed vegetation becomes richer from year to year. This can be taken as a proof of the Martians' struggle for existence under the adverse conditions on their planet. Other similar changes have also been observed previously near the so-called Sun-lake area of Mars. Sometimes sudden, very strong lights appear on certain spots of the Mars surface followed by a small

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H/004/61/000/012/001/001
D022/D105

Are there any intelligent beings on Mars?

cloud or smoke formation resembling an explosion. Such phenomena were observed in 1937, 1951, 1954 and also recently. These phenomena last a few minutes or a few seconds. The existence of intelligent beings on Mars is, however, still a hypothesis. Much can be expected from the space rockets which could photograph the Mars surface and its satellites and provide us with more explicit data. There are 4 figures.

Card 3/3

O.D. Zigel

AUTHOR: Gulyayev, B.B. SOV/24-58-4-37/39

TITLE: Conference on Crystallisation of Metals (Soveshchaniye po kristallizatsii metallov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 4, pp 153 - 155 (USSR)

ABSTRACT: This conference was held at the Institut mashinovedeniya AN SSSR (Institute of Mechanical Engineering of the Ac.Sc. USSR) on June 28-31, 1958. About 400 people participated and the participants included specialists in the fields of foundry, metallurgy, crystallography, physics, welding, heat, physical chemistry, mathematical physics and other related subjects. In addition to Soviet participants, foreign visitors included Professor D. Czikl (East Germany) and N.I. Chvorinov (Czechoslovakia). This conference on crystallisation of metals was the fourth conference relating to the general problem of the theory of foundry processes.

Crystallisation of Steel and Alloys with Special Properties. The following papers were read: V.I. Lapitskiy, N.I. Stunar', K.P. Rudachev, V.L. Oleksiyenko, A.I. Marinov - "Certain Methods of Reducing Non-uniformities of Large Castings (up to 20 t) made of Rimming Steel"; V.K. Novitskiy, A.N. Mikul'chin and V.V. Blinov - "Influence of Internal Crystallisers on the Structure and Properties of Steel Ingots"; N.I. Chvorinov (Czechoslovakia) - "On the Crystallisation of Steel"; A.P. Pronov - "Crystallisation of Continuously Cast Ingot and Influence on it of the Properties of

Card6/10 Liquid Steel"; L.I. Morozenskiy and O.D. Zigel' - "Influence of Movement of the Metal in the Liquid Core on the Crystallisation of Steel Ingots and Castings"; N.N. Guglin, A.A. Novikova and B.B. Gulyayev - "Crystallisation and Mechanical Properties of Steels at Elevated Temperatures"; V.Ye. Neymark - "Influence of Inoculation on the Deformation of the Crust and the Speed of Solidification of Ingots"; G.P. Ivantsov "Thermal Stresses and Deformation in the Crust of a Crystallising Ingot"; V.G. Gruzin and P.I. Yamshanov deals with problems of formation of the primary structure of structural steel and the influence on it of the temperature of pouring.

The features of crystallisation of castings made of alloys with special properties and of austenitic steels were dealt with in the following papers: I.I. Gorlunov - "Influence of Inoculation on the Structure and on the Physico-mechanical Properties of High-alloy Steels"; F.F. Khimushin, F.V. Aksenov, N.P. Lashko and N.Ya. Rodina - "Occurrence of Non-uniformities in High-temperature alloys During Crystallisation and Heat Treatment" and "Experimental Investigation of the Process

Card7/10 of Crystallisation of Cast Blades Made of Refractory Alloys"; A.M. Tufarov considered the process of recrystallisation of steel.

ZIGEL', O. D.

Solidification of Metals; ([redacted]) Trans. of 2nd Conf. on [redacted]
Theory of Foundry Processes, 56; Moscow, Mashgiz, 1958, 532pp

Zigel', O.D., Engineer; L.I. Morozenskiy, Candidate of Technical Sciences; and I.Ya. Granat, Candidate of Technical Sciences. Factors Determining the Development of Extra-axial Chemical and Structural Heterogeneity in Steel Ingots and Castings 338

Tageyev, V.M., Candidate of Technical Sciences; and Yu.D. Smirnov, Engineer. Investigation of the Process of Formation of Extra-axial Heterogeneity in Steel Ingots and Castings 352

III. IMPROVING THE QUALITY OF PRODUCTS BY REGULATING THE CONDITIONS OF SOLIDIFICATION OF CASTINGS

Postnov, L.M., Engineer; and B.B. Gulyayev, Doctor of Technical Sciences, Professor. Investigation of the Effect of Metal Solidification During the Filling of the Mold on the Quality of Steel Castings 374

Madyanov, A.M., Candidate of Technical Sciences. Control of the Process of Steel Solidification in the Mold in the Production of Heavy Ingots 397

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SOV/123-59-15-60472

Factors Determining the Development of Non-Axial Chemical and Structural Heterogeneity in Steel Bars and Castings

intensive flows occured near those sections of the crystallization front which are located horizontally above the liquid metal or vertically, where the vertical component of hydrostatic pressure is directed upwards or equal to zero. Near the front sections located horizontally below the liquid metal, e.g. in the bottom part of the bar, the flows were developed weakly or did not appear at all; here the supply takes place mainly at the expense of the above-located layer of metal. The flow intensity near the inclined sections may have a number of intermediate values, depending on the angle and direction of inclination. For instance the flow intensity is greater in bars growing wider at the bottom than in bars with vertical walls, and smaller in bars growing in width at the upper part. In both cases the difference is the more considerable, the more slanting the walls are. Also the extension of the crystallization front affects the flow intensity. On the basis of the comparison of the data obtained on the flow direction of the metal supply with the actual data on the location of dendritic heterogeneity ("whisker") in bars of bubble-free steel, it can be concluded that these flows are the causes of the appearance of "whiskers". Another necessary condition for the formation of whiskers is the existence of a zone of solid-liquid metal. At a high solidification rate this zone does not develop, therefore "whiskers" are not formed.

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ZIGEL, O. D., CHIZHIKOV, A. I., and MOROZENSKIY, L. I.

"An Investigation of the Thermal Work of the Nucleator Used in the Pouring of Steel on a Continuous Conveyor"

report presented at the 7th Conference on the Interaction of the Casting Mould and the Casting, sponsored by the Inst. of Mechanical Engineering, Acad. Sci. USSR, 25-28 January 1961.

AUTHOR: Zigel', O.D., Engineer SOV/133-58-8-9/30

TITLE: Conference on the Problem of Crystallisation of Metals (Soveshchaniye po probleme kristallizatsii metallov)

PERIODICAL: Stal', 1958, Nr 8, pp 709-710 (USSR)

ABSTRACT: The conference took place in January, 1958, in the Moscow Institute of Mechanical Engineering of the Ac.Sc. USSR. Altogether, 48 papers dealing with theoretical and production problems of the crystallisation of metals were read. In a paper on the present state and tasks of studies of crystallisation and properties of cast metals, B.B.Gulyayev analysed a large experimental material on the influence of the conditions of solidification and inoculation on the structure and properties of cast metal. Papers on the problems of the theory of crystallisation of metals and further development of views on the mechanism of the appearance of nuclei and growth of crystals were read by: A.S. Kamenetskaya, B.Ya. Lyubov, V.M. Malinin, G.P.Ivantsev, N.L. Pokrovskiy and D.Ye.Ovisenko. N.N. Sirota (Member of the Ac.Sc. of the Belorussian SSR) communicated the results of work on the development of physico-mathematical theory of nucleation and growth of crystals. B.Ya.Lyubov

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SOV/133-58-8-9/30

Conference on the Problem of Crystallisation of Metals

communicated the results of calculations of the velocity of solidification of metals in large volumes, taking into consideration the degree of over-cooling, showing the insignificant role of the latter in the heat balance, but pointing out its importance in studies of the formation of structures in ingots. V.Ye. Neymark, M.V. Mal'tsev and I.I. Goryunov gave experimental results confirming the influence of modification on an increase in fineness of the structure, an increase in indices of mechanical properties, and an increase in the rate of solidification of iron-carbon and non-ferrous alloys. On the basis of investigations of the influence of the velocity of crystallisation and composition of alloys of Fe-C and Al-Si systems on the quantitative characteristics of their structure, it was established by O.N. Magnitskiy, A.A. Demidova and B.B. Gulyayev that in pure metals and alloys of an eutectic composition there is a simple dependence of the size of primary grains on the velocity of crystallisation, while in alloys of the type of solid solutions, the relationship is more complicated. The influence of ultrasonics on the crystallisation and properties of alloys was discussed by

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SOV/133-58-8-9/30

Conference on the Problem of Crystallisation of Metals

N.N. Sirota, Ye.A. Lekhtblau, E.M. Smolyarenko and I.I. Teumin. I.V. Salli communicated the results of studies of the influence of high cooling rates (of the order of 1000°C/sec) on the character of crystallisation. N.N. Belousov and A.A. Dodonov reported on the influence of pressure on the structure, properties and shrinkage defects in castings. M.V. Simonenko, N.N. Belousov and V.S. Kolesnikova investigated the structure of copper alloys obtained by a galvanic-diffusion method. The process of diffusion of zinc from the gaseous phase into solid copper leads to the formation of alloys of a uniform structure and chemical composition similar to copper alloys obtained by the usual casting methods. Investigations of large ingots carried out by V.I. Lapitskiy and co-workers and V.N. Novitskiy and co-workers gave some practical indications as to how non-uniformity in ingots of killed and rimming steels can be decreased. Papers on the quality of metal obtained by continuous casting were read by A.P. Pronov (on special features of crystallisation of continuous ingots and the influence of the fluidity of steel on their structure), G.P. Ivantsev (on thermal stresses and deformations appearing

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Conference on the Problem of Crystallisation of Metals

in the solidifying crust of continuously cast rectangular semis), L.I. Morozenskiy and O.D. Zigel' (special features of ageing of continuously cast semis) and Ye.D. Zakharov (on the dependence of mechanical properties of semis from the shape of indentation on continuous casting of aluminium alloys). K.P. Bunin (Corresponding Member of the Ac.Sc. Ukrainian SSR) and Yu.N. Taran read a paper on "Eutectic crystallisation of grey cast irons" in which they analysed some specific features of the formation of graphite inclusions and gave kinetic S-shaped curves of eutectic transformation based on experimental data. Prof. Czikla (East Germany) reported on the theory of crystallisation of graphite in cast iron. Ya.N. Malinochka reported on on liquation of silicon. A.A. Zhukov developed a new scheme of structural diagrams of cast iron in which not only the rate of cooling but also some special features of the liquation of silicon were taken into consideration. I.I. Khoroshev investigated the mechanism of the formation of centres of crystallisation of graphite in castings from white iron showing that a preliminary heating or isothermal hardening increases the number of crystallisation

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Conference on the Problem of Crystallisation of Metals

centres and thus sharply decreases the annealing process. Two papers were read on the formation of nodular graphite. I.A. Shapranov and E.V. Petrova communicated that the introduction of magnesium leads to the separation of graphite before the solidification of the cast iron takes place and the presence of a large number of crystallisation centres and an increased silicon content promote graphitisation process after the solidification of iron. B.S. Mil'man explained conditions of the formation of spheroidal graphite. I.L. Mirkin gave the results of quantitative determination of Mo, Ni P, etc., along the cross-section of a dendrite using localised spectral analysis and photometry of microradiograms. Using micro X-ray and microradiography, B.A. Movchan made quantitative determinations of admixtures in aluminium alloys in the axis and interaxial spaces of dendrites (surface area of 0.003 mm diameter). L.I. Morozenskiy and O.D. Zigel' studied the movement of metal during solidification of ingots using radioactive atoms. Using specially developed technique of determining mechanical properties at high temperatures, N.N. Guglin, A.A. Novikova and B.B. Gulyayev

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SOV/133-58-8-9/30

Conference on the Problem of Crystallisation of Metals

obtained strength and plasticity characteristics for a number of steels at temperatures near to the solidification temperature. The conference gave recommendations on the further directions of the research work in the field of study of the process of crystallisation of metals, improvement in the quality of ingots and castings and a wider application of the results of research in practice.

Card 6/6 1. Metals--Crystallization 2. Cast metals--Properties 3. Crystals --Growth

SOV/137-58-9-18689

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 78 (USSR)

AUTHORS: Zigel', O.D., Morozenskiy, L.I., Granat, I.Ya.

TITLE: Factors Governing the Appearance of Extra-axial Chemical Inhomogeneity in Steel Ingots (Faktory, opredelyayushchiye razvitiye v stal'nykh slitkakh vneosevoy khimicheskoy neodnorodnosti)

PERIODICAL: V sb.: Staleplavil'n proiz-vo. Moscow, Metallurgizdat, 1958, pp 75-88

ABSTRACT: A study of the process of ingot formation was first conducted with billets of high height-to-cross-section ratio produced by continuous casting of steel. P^{32}, W^{185}, and S^{35} were introduced into the metal in the tundish. Macroscopic radiography of templets showed the isotopes to be in layers parallel to the plane of crystallization of the metal, the dissemination thereof into the ingot proceeding downwards at a rate of 10 m/min under the conditions of the experiment. This distribution of the isotope reveals the cause of its dissemination into the ingot to be primarily transfer by streams of liquid metal, the movement of which is induced, in the crystallization of an ingot

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SOV/137-58-9-18689

Factors Governing the Appearance of Extra-axial Chemical (cont.)

of killed steel, primarily by shrinkage upon transition from the liquid to the solid state. Metal containing W^{185} was added to in sand molds of various shapes after they had been filled. It was found that the radioactive tracer enters the casting in flows of metal along the front of crystallization at a rate considerably greater than the rate of motion of the metal in the rest of the liquid mass. The direction of displacement of the metal in the casting is not determined either by the temperature distribution in the casting or by the temperature of the metal in the incoming flow. The angle to the horizontal of segments of the front of crystallization has a significant effect upon the formation of longitudinal flows along the front. The influence of displacements of metal along the front of crystallization upon the degree of extra-axial chemical inhomogeneity was verified by loam casting of a 1.5-t ingot the sides of which had tapers of 30, 20, 5, and 0%. The appearance of "whiskers" adjacent to the vertical edge was noticeably more intensive than near the edges with 30% taper. The intensity of the metal flows along the front of crystallization depends upon the rate of solidification. Zonal inhomogeneity may occur only where the rate of crystallization is capable of giving rise to an intensified flow of metal along the front, and the formation of a region where 2 phases exist simultaneously. This explains the formation of pronounced inhomogeneities in the hot top of an ingot and the absence

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Factors Governing the Appearance of Extra-axial Chemical (cont.)

thereof toward the bottom. The differences in the chemical composition of the steel affect the intensity of "whisker" development because they result in different degrees of shrinkage of the metal.

L.K.

1. Steel--Processing 2. Steel--Crystallization 3. Steel--Structural analysis
4. Radioisotopes--Diffusion 5. Steel--Radiographic analysis

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ZIGEL', O.D., inzh.

Conference on problems of metal crystallization. Stal' 18 no.8:709-710 Ag '58. (MIRA 11:8)
(Solidification) (Metallography)

ZIGEL', P.

PONOMAREV, M., inzhener; ZIGEL', P., inzhener.

Increase the variety and improve the quality of garage equipment. Avt.transp. 32 no.1:33 Ja '54. (MLRA 7:8)
(Garages)

ZIGEL'BOYM, S.N., inzh.

Gluing wood with polyvinyl acetate emulsion. Der. prom.
13 no.6:3-5 Je '64. (MIRA 17:6)

1. Moskovskiy lesotekhnicheskiy institut.

ZIGEL'BOYM, S.N.; FREYDIN, A.S.; OVES, V.I.

Bonding of laminated paper plastics with wood. Der.prom. 14 no.11:3-5 N '65. (MIRA 18:11)

ZIGEL'BOYM, S.N.

Strength of glued wood. Der. prom. 14 no.7:11-13 Jl '65.
(MIRA 19:1)

1. Moskovskiy lesotekhnicheskiy institut.

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AUTHOR: Zigenlaub, R.

SOV/181-1-7-7/21

TITLE: A Method of Attenuation in the Theory of Electrical Conductivity

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 7, pp 1053-1061 (USSR)

ABSTRACT: The method of attenuation is intended to be used for eliminating the shortcomings of the formulas developed by Kubo, Nakano, et al. (the exact terms of the eigenvalues and eigenfunctions of the Hamiltonian H are unknown; if H' contains a small parameter, incorrect results are obtained by the method which extrapolates the formulas correct for small t to arbitrary t). In problems of electrical conductivity the Hamiltonian of the system is divided into two parts: $H = H_0 + H'$. While H_0 is characteristic of a system of infinite conductivity, H' defines the occurrence of a finite resistance. An expression of electrical conductivity in the H_0-representation is desired. The author presents a general method of transition to the H_0-representation (called "method of attenuation" similar to the corresponding method in the quantum field theory) and deals with the case in which H' is small

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A Method of Attenuation in the Theory of Electrical Conductivity

$$\frac{dj(t)}{dt} = \frac{i}{\hbar}\left[H_o + H', j(t)\right]$$ (where j(t) is the current operator)

is transformed in the H_o-representation into

$$\frac{\hbar}{i}\,\frac{dj(t)_{mn}}{dt} = (E_m - E_n)\,j(t)_{mn} + \sum_{l}\left(H'_{ml}\,j(t)_{ln} - j(t)_{ml}\,H'_{ln}\right)$$

The Laplace transformation is applied to this equation. After retransformation the relations

$$j(+)^k_{kk} = \frac{jk}{2\pi i}\int_{\gamma-i\infty}^{\gamma+i\infty}\frac{e^{st}\,ds}{s+T_k(s)}\,\Big|\,\gamma>0 \quad \text{and} \quad j(t)^k_{mn} = \frac{jh}{2\pi i}\int_{\gamma-i\infty}^{\gamma+i\infty}\frac{z(s)^k_{mn}\,e^{st}\,ds}{s+\Gamma_k(s)},\ \gamma>0$$

are obtained. The operator is treated in a similar way:

$F = e^{-\lambda H}$. From this it follows:

$$F(\lambda)_{mm} = \frac{1}{2\pi i}\int_{\gamma-i\infty}^{\gamma+i\infty}\frac{e^{\lambda s}\,ds}{s+E_m+H'_{mm}+\Phi_m(s)}\ ;\quad F(\lambda)_{mn} = \frac{1}{2\pi i}\int_{\gamma-i\infty}^{\gamma+i\infty}\frac{u(s)_{mn}\,e^{\lambda s}\,ds}{s+E_n+H'_{nn}+\Phi_n(s)}$$

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and, as an expression of electrical conductivity in the constant field,

$$\sigma_{\mu\mu} = \beta \lim_{\varepsilon \to 0} \int_0^{\infty} e^{-\varepsilon t} dt \, \mathrm{Re} \Big\{ F(\beta)_{mm} j_{\mu,m} j_{\mu}(t)^{m}_{mm} + \sum_{k \neq m} F(\beta)_{mm} j_{\mu,m} j_{\mu}(t)^{k}_{mm} +$$

$$\sum_{m \neq n} F(\beta)_{mn} j_{\mu,n} \left[j_{\mu}(t)^{n}_{nm} + j_{\mu}(t)^{m}_{nm} \right] + \sum_{m \neq n \neq k (\neq m)} F(\beta)_{mn} j_{\mu,n} j_{\mu}(t)^{k}_{nm} \Big\} \left[\sum_{m} F(\beta)_{mm} \right]^{-1}$$

If the inequality $\left| H'_{mn} \right| \gg \frac{1}{\hbar} \Big| \sum_{l (\neq m,k)} \frac{H'_{ml} H'_{ln}}{\omega_{ml} + is}$ is satisfied ,

it holds: $j(t)^{k}_{kk} = \frac{j_k}{2\pi i} \int_{\gamma - i\infty}^{\gamma + i\infty} \frac{e^{st} ds}{s + \hbar^{-2} \sum_{n (\neq k)} |H'_{kn}|^2 \left[(s + i\omega_{kn})^{-1} + (s - i\omega_{kn})^{-1} \right]} \Big| \gamma > 0$ (A).

In the presence of an alternating field the accurate dependence of the aftereffect-versus-time function must be known. (A) becomes

$$j(t)^{k}_{kk} = \frac{j_k}{2\pi i} \int\limits_{-\infty}^{\infty} \frac{e^{ixt}\,dx}{x+R_k(x)-i\,X_k(x)} \qquad \text{(B)}, \quad \text{where}$$

$$R_k(x) = \rho_k(\omega_k - x) - \rho_k(\omega_k + x), \quad X_k(x) = \chi_k(\omega_k - x) + \chi_k(\omega_k + x), \quad \omega_k = \frac{(E_k + H'_{kk})}{\hbar},$$

and $\rho_k(y) = \frac{1}{\hbar^2} \sum\limits_n |H'_{kn}|^2 \frac{P}{y-\omega_n}$, $X_k(y) = \frac{\pi}{\hbar^2} \sum\limits_n |H'_{kn}|^2 \delta(y-\omega_n)$.

The author investigates the asymptotic behavior of (B) for large t-values and obtains:

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$$j(t)_{kk}^{k} \cong j_k \left\{ \frac{e^{-itx_k^{(1)}(0)}}{1-R_k^{(1)}(0)'} + \frac{1}{\pi} \operatorname{Im} \int_{\omega_k}^{\infty} e^{ixt} \left[\frac{1}{x+R_k^{(2)}(x)-i\,X_k^{(2)}(x)} - \frac{1}{x+R_k^{(1)}(x)-i\,X_k^{(1)}(x)} \right] dx \right\}.$$

The method apparently offers a way of avoiding the limited applicability of the kinetic equation. In conclusion, the author thanks Academician N. N. Bogolyubov for the fundamental idea of this investigation, V. L. Bonch-Bruyevich, L. E. Gurevich, A. G. Samoylovich and M. I. Klinger. There are 6 references, 3 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet. Fizicheskiy fakul'tet (Moscow State University, Department of Physics)

SUBMITTED: July 25, 1958

4

ZIGENLAUB, R.

Calculation of the electrical conductivity of a semiconductor with high impurity concentration. Dokl. AN SSSR 117 no.3:395-398 N '57.
(MIRA 11:3)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova. Predstavleno akademikom N.N. Bogolyubovym.
(Semiconductors)

L 9449-66

ACC NR: AP6001922 SOURCE CODE: UR/0107/65/000/003/0032/0033

AUTHOR: Ziger, A. (Engineer); Shkol'nik S. (Engineer)

23
B

ORG: none

TITLE: Stereophonic set "Belarus'-62-stereo"

SOURCE: Radio, no. 3, 1965, 32-33

TOPIC TAGS: circuit design, electronic equipment, electronics

ABSTRACT: The stereophonic set "Belarus'-62-stereo", designed by the Minsk Radio Factory is a combination of a fifteen-tube AM-FM superhetodyne and a stereophonic 4-speed record player. It has a long-wave band, a broadcasting band, and three short-wave bands (3.9-7.7, 9.4-9.8, and 11.6-12.1 Mc) in addition to the ultrahigh-frequency 65.8-73 Mc band. The intermediate AM frequency is 465 kc, FM - 6.5 Mc. The AM band width is continuously varying from 4-4.5 kc to 9-11 kc. With external antenna the sensitivity is 10-30 μV for long and medium waves, 20-50 μV for short waves, and 2-5 μV for UHF. An image rejection is 40-60 db. FM slopes of the resonant characteristics are 0.35-0.45 db/kc at a 120-180 kc band width. AM suppression is 26-30 db. Nominal power of each audio amplifier is 4 W, its pickup sensitivity not less than 150 mV, hum and noise not worse than 50-60 db. The audio amplifier reproduces the AM audio frequency band with 60-6000

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L 9449-66

ACC NR: AP6001922

0

c/sec, FM - 60-16,000 c/sec. Nonlinear AM distortions for 50% modulation are not greater than 3%, FM - 4%. The article describes in details the construction and operation of each circuit element, and supplies the complete circuit diagram. Orig. art. has: 7 figures and 2 tables. [JPRS]

SUB CODE: 09 / SUBM DATE: none

Card 2/2 pw

L-14167-66 EWP(j)/EWP(k)/EWT(d)/ETC(m)-6/EWP(w)/EWP(v)/EWT(t)/T/EWT(m)

ACC NR: AP6003942 JD/WW/HM/EM/RM SOURCE CODE: UR/0374/65/000/005/0078/0084

AUTHOR: Freydin, A. S. (Moscow); Novokreshchenov, P. P. (Moscow); Zigern-Korn, V. N. (Moscow)

63.
55
41

ORG: none

TITLE: Dispersion of strength properties and reliability of adhesive joints

SOURCE: Mekhanika polimerov, no. 5, 1965, 78-84

TOPIC TAGS: aluminum alloy, adhesive, ~~dispersion hardening~~, ~~cold hardening~~, ~~heat stress~~, epoxy plastic, filler, ultimate strength, solid mechanical property

ABSTRACT: The dispersion of strength properties of adhesive joints of an aluminum alloy with the cold setting epoxy adhesive (EPTs-1) has been investigated. It was found by mathematical and statistical methods that the presence of a filler and the size of its particles, as well as an additional heat treatment after glueing, exert a strong effect on the dispersion of strength properties of the adhesive joints. In consideration of these findings, it is possible to reduce the dispersion of strength properties and to improve the reliability of the adhesive joints. Orig. art. has: 3 figures and 3 tables. [Based on author's abstract].

Card 1/2

UDC: 678:688.395.744:669:717:620.176.24

L 14167-66

ACC NR: AP6003942

0

SUB CODE: 11/ 01/ SUBM DATE: 09Mar65/ ORIG REF: 007/ OTH REF: 002

Card 2/2 30

ZIGERT, V.N.

Universal pneumatic pedestal for radial-drilling machines. Mashinostroitel' no.4:24 Ap '63. (MIRA 16:5)
(Drilling and boring machinery)

ZIGLIN, L.A., gornyy inzh.

Workers of Mine No.38 are fighting for the title of enterprise of communist labor. Ugol' 36 no.2:56-58 F '61. (MIRA 14:2)

1. Nachal'nik shakhty No.38 tresta Stalinogorskugol' kombinata Tulaugol'.
(Tula Basin—Coal mines and mining—Labor productivity)

ZIGENLAUB, R.

Method of damping in the theory of electric conductivity.
Fiz.tver.tela 1 no.7:1053-1061 Jl '59. (MIRA 13:2)

1. Moskovskiy gosudarstvennyy universitet, Fizicheskiy fakul'tet.
(Electric conductivity)

Zigenlaub, R.

20-3-11/52

AUTHOR: Zigenlaub, R.

TITLE: Calculation of the Electric Conductivity of a Semiconductor With a High Admixture Concentration (Raschet elektroprovodnosti poluprovodnika s vysokoy kontsentratsiyey primesi).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 3, pp. 395-398 (USSR)

ABSTRACT: The present work investigates the scattering of current carriers by the charged admixture by a method already previous described (Ref. 3, 4, 5). It is possible, in this case, to do without restrictions of the type $\tau \gg h/\varkappa T$ (τ here denotes the relaxation time of the medium). At first the general formulae are derived. Here only current carriers of a type are assumed which are, for reasons of certainty, described as electrons. The Hamiltonian of such a system has the form $H = H_0 + H'$,

$$H_0 = \sum_{\vec{k}} \varepsilon_{\vec{k}} a^+_{\vec{k}} a_{\vec{k}}, \quad H' = \sum_{\vec{k}\vec{k}'} V_{\vec{k}\vec{k}'} a^+_{\vec{k}'} a_{\vec{k}}$$

H' characterizes the interaction of the electrons with the charged admixture centers, $\vec{k}$ = the quasi-momentum of an electron in the conduction zone

$a^+_{\vec{k}}$ and $a_{\vec{k}}$

Card 1/3

Calculation of the Electric Conductivity of a Semiconductor With a High Admixture Concentration 20-3-11/52

ASSOCIATION: Moscow State University imeni M. V. Lomonosov
(Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova)

PRESENTED: July 3, 1957, by N. N. Bogolyubov, Academician

SUBMITTED: June 26, 1957

AVAILABLE: Library of Congress

Card 3/3

ZIGER, A., inzh.; SHKOL'NIK, S., inzh.

Stereophonic radio-phonograph combination "Belarus'-62-Stereo."
Radio no.3:32-33 Mr '65. (MIRA 18:6)

ZIGEUNER

Neurological symptoms and differential diagnosis of chronic barbiturate intoxication. R. Zigeuner and H. Jaklitsch (Univ. Graz, Austria). *Med. Monatsschr.* 8, 81-5(1954).—The electroencephalic findings are analyzed. Therapy consists in intravenous injections of procaine which not only combat the symptoms but also prevent the appearance of the withdrawal syndrome. A. E. M

Chem A

Hardening processes of phenol-formaldehyde resins. XXI. Hardening with hexamethylenetetramine. 5. A. Zinke, G. Zigeuner, O. Weiss, W. Leupold-Löwenthal, and K. Wiesenberger (Univ. Graz, Austria). *Monatsh.* 81, 1098-1107(1950); cf. *C.A.* 45, 2383a.—Di- and tri-functional phenols appear to react with $(CH_2)_6N_4$ (I) in the same way as mono-functional phenols giving chiefly products in which phenol nuclei are linked by $(CH_2)_2NH$ bridges and which can react with excess phenol to lose NH_3 and form [illegible] linked by methylene groups. Formation of quinone methide derivs. is regarded as a minor side reaction, contrary to Hultzsch (*C.A.* 44, 4283g). A mixt. of 5 g. 3,4-$Me_2C_6H_3OH$ (II) and 11.43 g. I heated 3 hrs. at 130-140°, extd. with H_2O to remove I, and crystd. from benzene gives a pale yellow, microcryst. powder (III) of mol. wt. 712 contg. 7.47% N. III darkens on heating, losing NH_3 and $MeNH_2$; in 7 hrs. at 180-190° the N content drops to 6.43%. Heating III 3 hrs. at 190-200° with 8 mols. II gives a product which retains only 0.4% N and which contains 2,6-bis(3,4-dimethyl-6-hydroxybenzyl)-3,4-dimethylphenol and 2,2'-dihydroxy-4,4',5,5'-tetramethyldiphenylmethane. If III is first heated alone 7 hrs. at 180-190° and then is heated with II as above, the final product (IV) contains 0.7% N, presumably present as azomethine groups. With alc. HCl IV gives 2,4,5-$HOMe_2C_6H_2CHO$ (V), identified as the *2,4-dinitrophenylhydrazone*, red, m. 264-5°. V, m. 71°, was also prepd. by oxidation of 2,4,5-$HOMe_2C_6H_2CH_2OH$ with 3-$NO_2C_6H_4SO_3Na$ and NaOH. Reaction of 2-g. portions of

(over)
(continued)

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Chem A

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p-$Me_3CC_6H_4OH$ (VI) with 1 g. I at the following temps. gave resins having the following mol. wts., % N and $K_m \times 10^{-4}$ values: 130°, 850, 6.61, 11.7; 150°, 965, 6.33, 10.1; 170°, 1055, 5.50, 10.2; 190°, 981, 3.50, 14.0; 230°, —, 3.55, —. A mixt. of 10.5 g. VI with 8 g. purified resin obtained at 130°, heated 4 hrs. at 190-200° gives NH_3, *2,2'-dihydroxy-5,5'-di-tert-butyldiphenylmethane* m. 156° and *2,6-bis(2-hydroxy-5-tert-butylbenzyl)-4-tert-butylphenol*, m. 213.5°. The resin prepd. at 190° yields 2,5-$HO(Me_3C)C_6H_3CHO$ on heating with aq. HCl. Reaction of 3-g. portions of PhOH (VII) with 3.3 g. I at the following temps. gives resins contg. the following % N: 130°, 8.64; 150°, 8.15; 170°, 7.94; 190°, 7.85; 210°, 4.48. A mixt. of 5.9 g. VII and 5 g. resin obtained at 130°, heated 2 hrs. at 190-210°, gives 2,4'- and 4,4'-$(HOC_6H_4)_2CH_2$. The resins obtained at 170°, 190°, and 230°, with alc. HCl give 2- and 4-HOC_6H_4CHO. Formation of aldehydes by HCl cleavage of the various resins is ascribed to azomethine groups in the resins. Since no dialdehydes result, azomethine groups presumably form only at the ends of the resin chains. **XXII. Hardening with hexamethylenetetramine. 6.** G. Zigeuner, W. Schaden, and E. Wiesenberger. *Ibid.* 1017-23.—In the reaction of $(CH_2)_6N_4$ with 2,6-$Me_2C_6H_3OH$ or with large excesses of 2,4-$Me_2C_6H_3OH$ (I) tribenzylamine derivs. result. Apparently dibenzylamine derivs. first form and are converted to tribenzylamine derivs. through action of the monophenol. A mixt. of 2 g. I and 1 g. 2,2'-dihydroxy-3,3',5,5'-tetramethyldibenzylamine (II) heated 50 min. at 130-40° gives NH_3 and 2,2',2''-trihydroxy-3,3',3'',5,5',5''-hexamethyltribenzylamine (III), m. 182°, in nearly quant. yield. III is also obtained from 1 g. II and 1.2 g. I refluxed 3 hrs. in 1 cc. xylene. Likewise III results when a mixt. of 2,4-$Me_2C_6H_3OH$ and II is heated alone or in xylene soln. (yields nearly quant.) and when 3,5-$Me_2C_6H_3OH$ and II are heated 1-2 hrs. at 105-110° (60% yield). While II is unaffected by heating with 2,4-$Cl_2C_6H_3OH$ (IV) in H_2O at 100°, heating 1 g. II and 1.5 g. IV 2 hrs. at 130° gives *2,2'-dihydroxy-3,5-dimethyl-3',5'-dichlorodibenzylamine* (V) m. 206°. The *HBr salt* of V is obtained by heating 0.5 g. 2,3,5-$HOMe_2C_6H_2CH_2NH_2$ and 0.95 g. 2,3,5-$HOCl_2C_6H_2CH_2Cl$ in xylene; it m. 240-2° and with NH_3 in EtOH gives V. The conversion of II to a tribenzylamine deriv. does not occur when II is heated 2 hrs. at 140° with PhOAc, 2,6-$Me_2C_6H_3OH$, or 2,4,6-$Me_3C_6H_2OH$. The catalytic effect of ortho-reactive phenols on formation of the tribenzylamine deriv. cannot be completely explained on the basis of the H-effect of Hultzsch (*C.A.* 44, 305c) and is ascribed to the intermediate formation of an especially reactive adduct.

A. P. Shepard

1951

CA

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Cleavages with diazonium compounds. IX. Phenol-sulfur compounds. E. Ziegler, G. Zigeuner, E. Wiesenberger, and A. Kainzner (Univ. Graz). *Monatsh.* 82, 235-44(1951); cf. *C.A.* 45, 6170a.—Compds. of the types $(p\text{-HOC}_6\text{H}_4)_2\text{CH}_2$, $(p\text{-HOC}_6\text{H}_4)_2\text{CHOH}$ (I), and $p\text{-HOC}_6\text{H}_4\text{CH(OH)Ph}$ are cleaved by diazonium salts in alk. soln.; $p\text{-HOC}_6\text{H}_4\text{CH}_2\text{Ph}$ and $(p\text{-HOC}_6\text{H}_4)_2\text{CO}$ (II) are not. Compds. of the type $(p\text{-HOC}_6\text{H}_4)_2\text{S}$ resemble I in being cleaved by $(p\text{-O}_2\text{NC}_6\text{H}_4\text{N}_2)_2\text{SO}_4$ (III), but the related sulfones and sulfoxides can not differ as much from II as is often assumed because, like II, they can not be cleaved. $o\text{-MeC}_6\text{H}_4\text{OH}$ and SOCl_2 form $[3,4\text{-Me(HO)C}_6\text{H}_3]_2\text{SCl}$, decomp. 231°, which also can not be cleaved. $(p\text{-HOC}_6\text{H}_4)_2\text{S}$ and III give 2,4-$(p\text{-O}_2\text{NC}_6\text{H}_4\text{N}_2)_2\text{C}_6\text{H}_3\text{OH}$, m. 278°. $[3,4\text{-Me(HO)C}_6\text{H}_3]_2\text{S}$ (IV) and III form 6,2,4-$\text{Me}(p\text{-O}_2\text{NC}_6\text{H}_4\text{N}_2)_2\text{C}_6\text{H}_2\text{OH}$, m. 254-6°. Oxidation of IV with 30% H_2O_2 in HOAc forms the sulfoxide, m. 177.5°. In an attempt to prep. a hydroxybenzyl mercaptan, 3,4,5,2-$\text{BrMe}_2\text{(HO)C}_6\text{HCH}_2\text{Br}$ was treated with KS_2COEt in Me_2CO, forming the ethyl xanthogenate (V), m. 87.5°. Hydrolysis of V with alc. NaOH formed (3,4,5,2-$\text{BrMe}_2\text{(HO)C}_6\text{H})_2\text{S}$ (VI), m. 94.5°. Similarly 3,2,5,4-$\text{BrMe}_2\text{(HO)C}_6\text{HCH}_2\text{Br}$ (VII) formed the *p*-analogs of V and VI (VIII), m. 60° and 164°, resp. VII and NaSH in aq. Me_2CO formed VIII. 5,2,3-$\text{Me(HO)(PhN}_2\text{)C}_6\text{H}_2\text{CH}_2\text{Cl}$ (IX) likewise gave the analogs of V and VI, m. 56° and 175°, resp. However IX differs from VII in forming with NaSH the benzyl mercaptan, m. 104°. 2,6,4-$(\text{ClCH}_2)_2\text{MeC}_6\text{H}_2\text{OH}$ treated similarly formed the 2,6-$(\text{EtOCS}_2)_2$ compd., m. 57.5°, which on hydrolysis formed 3,2,5-$\text{HSCH}_2\text{(HO)MeC}_6\text{H}_2\text{CH}_2[\text{SCH}_2\text{(HO)MeC}_6\text{H}_2\text{CH}_2]_n\text{S-CH}_2\text{C}_6\text{H}_2\text{Me(OH)CH}_2\text{SH}$-5,2,3, m. 157°. These thio ethers are cleaved by diazonium salts.

Structure of phenolphthalein in alkaline medium. E. Ziegler, H. Toppler, and M. Sobotka. *Scientia Pharm.* 19, 21-32 (1951).—PhN_2Cl (X) and phenolphthalein (XI) (2 mols.:1) do not react in a soln. contg. 16 mols. of NaOH. In one contg. 12 moles, they form 10% $p\text{-PhN}_2\text{C}_6\text{H}_4\text{OH}$ (XII), m. 152°, 6% 2-$(p\text{-HOC}_6\text{H}_4\text{CO})\text{C}_6\text{H}_4\text{CO}_2\text{H}$ (XIII), m. 210-12°, and 25% $\overbrace{o\text{-C}_6\text{H}_4\text{.CO.O.C}}[\text{C}_6\text{H}_3\text{(OH)N}_2\text{Ph-4,3}]_2$ (XIV); in one contg. 8 mols., 17% XII, 17% XIII, and 45% XIV; in one contg. 3 or 4 mols., 90-100% XIV; in one contg. 2 mols. if carefully buffered, 70% 2,4-$(\text{PhN}_2)_2\text{C}_6\text{H}_3\text{OH}$, m. 132-3°. XIV, m. 242-3°, was shown to be the sym. compd. by reaction with H_2NOH in KOH soln., forming the 3-hydroxyisoindolinone (XV), m. 184-5°, and cleavage with alc. H_2SO_4 to $(4,3\text{-HO(PhN}_2\text{)C}_6\text{H}_3\text{NH}_2)_2.\text{H}_2\text{SO}_4$, m. 178° [free base (XVI), m. 135-6°, and 2-$(4,3\text{-HO(PhN}_2\text{)C}_6\text{H}_3\text{CO})\text{C}_6\text{H}_4\text{CO}_2\text{H}$ (XVII), m. 186°. Similar treatment of dinitrophenolphthalein showed that it also is sym. The analogs of XV, XVI, and XVII m. 206.5-7°, 129°, and 180° (Et ester, m. 111-13°), resp. Use of a 1:1 ratio of X and XI did not form a monosubstituted XI similar to XIV. These results are interpreted as meaning that the colored form of XI can not have a permanently fixed quinonoid ring in its formula. Z. favors the usual resonance formulation involving both rings as partially quinonoid and an intermediate carbonium ion. The two colorless forms present in dil. and concd. alkali are of type I or closely resemble it and so undergo cleavage. For them the customary lactone and triphenylcarbinol structures are adopted. The failure of X and XI to react in very concd. alkali is not clearly understood since III is able to react under these conditions and PhOH and X couple under these conditions also. I. H. Scott

CA

Cleavages with the help of diazonium compounds. IV. Hydroxybenzophenones. O. Zigeuner and H. Ziegler (Univ., Graz, Austria). *Monatsh.* 80, 350-63(1949); *Oesterr. Akad. Wiss., Math.-Naturw. Klasse, Sitz.-ber.* Abt. IIb, 158, 359-63(1949); cf. *C.A.* 44, 1404e.—Like o-(p-$HOC_6H_4CO)C_6H_4CO_2H$, p-HOC_6H_4COPh fails to couple with diazonium compds. (p-$O_2NC_6H_4N_2Cl$ (I), 2,4-$(O_2N)_2C_6H_3N_2Cl$). (p-$HOC_6H_4)_2CO$ (II) is likewise inert. p-$HOC_6H_4CH(OH)Ph$ in NaOH with I is cleaved into *4-hydroxy-4'-nitroazobenzene*, m. 213° (from PhMe or $PhNO_2$), and BzH (2,4-dinitrophenylhydrazone, m. 235°). p-Benzylphenol with I gives *2-(p-nitrophenylazo)-4-benzylphenol*, Cu-colored crystals from AcOH, m. 172-3°. The oxime of II, m. 266-7° (decompn.) [cf. Spiegler, *Monatsh.* 5, 190(1884)], on coupling with p-$NO_2C_6H_4NH_2$ (?; no doubt misprint for I) gives a dark brown, cryst. *compd.*, m. 244-5° (no analysis given), assumed to be a diazoxime (*C.A.* 1, 2250¹). (o-$HOC_6H_4)_2CO$ with I couples normally to *2,2'-dihydroxy-5,5'-bis(p-nitrophenylazo)benzophenone*, orange needles from $PhNO_2$, m. 200°. 4,5,2-$Me_2(HO)C_6H_2CH_2OH$, m-$O_2NC_6H_4SO_3Na$, and 10% aq. NaOH, boiled for 1 hr., give 4,5,2-$Me_2(HO)C_6H_2CHO$, m. 70° (cf. Gattermann, *C.A.* 2, 820), which does not react with I. 5,2,3-$Me(HO)(HOCH_2)C_6H_2CHO$ [2,4-dinitrophenylhydrazone, m. 239-40° (decompn.)] is likewise inert to I. **V. o-Cresolphthalein.** H. Ziegler and G. Zigeuner. *Monatsh.* 80, 313-14 (1949).—The reaction of o-cresolphthalein (I) in alk. soln. with p-$MeC_6H_4N_2Cl$ has been formulated by Leandri (*C.A.* 42, 6246) as giving a mono- and a bis(p-tolylazo) deriv. of I, m. 273° and 166°, resp. In contrast, phenolphthalein has been found by Z. and Z. (*C.A.* 44, 1404a) to be cleaved with diazonium compds. into azophenols and 2-(p-$HOC_6H_4CO)C_6H_4CO_2H$ (II). It has now been found that I too is cleaved to the extent of 25% into II, and that L.'s compd., m. 166°, is 4,6(or 3,5)-bis(p-tolylazo)-o-cresol (acetate, m. 147°). No exptl. details are given. U. Weiss

CA

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Hardening processes of phenol-formaldehyde resins. XXIV. Hardening with hexamethylenetetramine. G. Zigeuner, W. Schaden, O. Gabriel, and E. Wiesenberger. *Monatsh.* 81, 1108-12(1950); cf. C.A. 45, 4477i.—The dibenzylamine derivs. formed from phenols and hexamethylenetetramine (I) can be differentiated by their behavior with Ac_2O. o-Hydroxybenzylamines give diacetyl derivs. saponifiable with alc. alkali to *N*-monoacetyl deriv. o,o'-Dihydroxydibenzylamines give unsaponifiable *N*-monoacetyl compds. while the o,p'-isomers give diacetyl derivs. saponifiable to *N*-monoacetyl derivs. Trihydroxytribenzylamines give easily saponifiable triacetyl derivs. By acetylation of reaction products of phenols and I and detn. of unsaponifiable Ac deriv. it should be possible to det. dibenzylamine N. Heating the *N*-acetyl deriv. of $(2,3,5\text{-}HOMe_2C_6H_2CH_2)_2NH$ and $2,4\text{-}Me_2C_6H_3OH$ for 2 hrs. at 170-5° gives $(2,3,5\text{-}HOMe_2C_6H_2)_2CH_2$, m. 148°. $2,3,5\text{-}HOMe_2C_6H_2CH_2NH_2$, aq. CH_2O, and $2,6\text{-}Me_2C_6H_3OH$ give 2,4'-dihydroxy-3,3',5,5'-tetramethyldibenzylamine, isolated as its HCl salt (II) m. 176°. With Ac_2O and NaOAc II gives a diacetyl deriv. (III) m. 120°. With alc. alkali III gives the corresponding *N*-monoacetate m. 144°. The HCl salt of $2,3,5\text{-}HOMe_2C_6H_2CH_2NH_2$ with Ac_2O and NaOAc gives a diacetyl deriv. m. 108° which on sapon. yields a *N*-monoacetyl deriv. m. 148.5°. Acetylation of 2,2',2''-trihydroxy-3,3',3'',5,5',5''-hexamethyltribenzylamine (IV) gives a triacetyl deriv. m. 120° and convertible to IV on sapon.

A. P. Shepard

CA

Products of the condensation of 3,4-dimethylphenols with formaldehyde. G. Zigeuner, E. Ziegler, W. Schaden, and R. Wiesenberger (Univ., Graz, Austria).
Monatsh. **81**, 329-9(1950); cf. C.A. 44, 1104e. 2,3,4,6-BrMe₂(BrCH₂)C₆HOH (I) (1 g.) and 2,3,4-BrMe₂C₆H₂OH (2 g.), heated 4 hrs. on a water bath, the cooled,
brown, cryst. mass extd. with petr. ether, and the residue
recrystd. from dil. EtOH, gave 2,2'-dihydroxy-3,3'-di-
bromo-4,5,5',6'-tetramethyldiphenylmethane (II); waxy
prisms, m. 165°; mixed m. p. with 2,2'-dihydroxy-3,3'-
dibromo-4,4',5,5'-tetramethyldiphenylmethane (III), 122°;
mixed m.p. with 2,6-bis(2-hydroxy-3-bromo-4,5-dimethyl-
benzyl)-3,4-dimethylphenol (IV), 138°. I (1.8 g.) and 1.5
g. 3,4-Me₂C₆H₃OH in 25 ml. EtOH, heated 60 min. on
the water bath with 15 ml. 20% H₂SO₄, the soln. evapd.,
and the residue recrystd. from dil. EtOH, gave 2,2'-di-
hydroxy-3-bromo-4,4',5,5'-tetramethyldiphenylmethane (V),
rods, m. 167° (decompn.). To 0.72 g. V in 25 ml. CCl₄ an
equiv. amt. of Br in 10 ml. CCl₄ was added dropwise
while heating on a water-bath, the orange-yellow product
treated with boneblack, filtered, evapd., and the residue
recrystd. from methylcyclohexane or aq. EtOH to give
III, m. 143°. Bromination in the same manner of 2,2'-
dihydroxy-4,5,4',5'-tetramethyldiphenylmethane also gave
III. Bromination of 2,6-bis(2-hydroxy-4,5-dimethyl-
benzyl)-3,4-dimethylphenol gave IV, m. 104°. Treatment
of 2,2'-dihydroxy-3,3'-dihydroxymethyl-4,5,5',6'-tetramethyl-
yldiphenylmethane with HBr in CCl₄ gave 2,2'-dihydroxy-
*3,3'-bis(bromomethyl)-4,5,5',6'-tetramethyldiphenylmeth-
ane* (VI), m. 170° (decompn.) (from C₆H₆). VI in Et₂O,
satd. with HCl, reduced with Zn dust, the Et₂O soln.
washed with water, neutralized with NaHCO₃, dried with
CaCl₂, the Et₂O evapd., and the oil recrystd. from methyl-
cyclohexane or aq. EtOH, gave 2,2'-dihydroxy-3,3',4,5,-
5',6'-hexamethyldiphenylmethane, colorless needles, m.
140°. J. P. Dinchy

ZIGEUNER, G.
E. ZIEGLER, Scientia Pharm. 17, 37-42, 1949
Monatsh 81, 480-7, 1950

CH

18

p-Hydroxyphenylcarbonyl compounds. I. Reaction with formaldehyde and ammonium chloride. G. Zigeuner and E. Wiesenberger (Univ. Graz, Austria). *Monatsh.* 80, 801-11(1949).—*p*-HOC_6H_4Ac (I) (1 g.), 1.5 g. NH_4Cl, and 1.5 g. 30% HCHO heated on a H_2O bath 30 min., filtered, washed with alc., dried, and recrystd. from 70% alc. or 70% AcOH, gave 0.7 g. (*p*-$HOC_6H_4COCH_2CH_2)_3N.HCl$ (II.HCl), m. 150° (decompn.). II.0.5H_2SO_4, m. 172°, was obtained by treating 1 g. II.HCl in 50 cc. 70% alc. with $NaHCO_3$, adding 10 cc. dil. H_2SO_4, concg. on a H_2O bath, cooling, and recrystg. from 80% AcOH. The filtrate from the prepn. of II.HCl, treated with H_2O, gave an oil, becoming somewhat cryst. after 12 hrs., which, after removal of the supernatant liquid, was ground with alc. and recrystd. from H_2O contg. several drops concd. HCl, giving (*p*-$HOC_6H_4COCH_2CH_2)_2NMe$ (III), m. 191° (decompn.). III was also prepd. by heating 1 g. I, 1.5 g. 30% CH_2O, and 0.1 g. $MeNH_2.HCl$ 1.5 hrs. on a H_2O bath. II.HCl (2 g.) in 25 cc. 10% NaOH and 75 cc. alc., refluxed 30 min., neutralized with HCl, and the product recrystd. from AcOH gave (*p*-$HOC_6H_4COCH_2CH_2)_2NH$ (IV), m. 194°. IV suspended in dil. alc., heated, and concd. HCl added gave IV.HCl, m. 196° (decompn.). IV.HCl was also obtained by passing HCl gas through the filtrate from the prepn. of IV. II in excess NaOH with BzCl, added dropwise, gave *p*-$BzOC_6H_4COCH_2CH_2OBz$ (V), m. 157° (from Me_2CO-H_2O). The alk. filtrate from the prepn. of V, further treated with BzCl, and the sepd. oil washed with H_2O and extd. with EtOAc, gave (*p*-$BzOC_6H_4COCH_2CH_2)_2NBz$ (VI), m. 167-8°. II.HCl in excess Ac_2O and a small amt. of NaOAc refluxed 2 hrs., cooled, poured into H_2O, let stand 12 hrs., and the product recrystd. from C_6H_6 gave (*p*-$AcOC_6H_4COCH_2CH_2)_2NAc$ (VII), m. 141°. II.HCl (2 g.), 1.8 g. $PhNHNH_2.HCl$, and 2 g. NaOAc in 20 cc. AcOH and 40 cc. H_2O heated 2.5 hrs. on a H_2O bath gave $p\text{-}HOC_6H_4\underbrace{C{:}N.NPh.CH_2.CH_2}$ (VIII), m. 156-7° (from methylcyclohexane). HCl gas was passed through the filtrate obtained in the prepn. of VIII, H_2O added, the mixt. let stand 12 hrs., the VIII filtered off, the filtrate neutralized with 10% NaOH, the ppt. suspended in warm aq. alc., concd. HCl added, the alc. evapd., and the residue recrystd. from H_2O contg. HCl, giving IV.HCl.

II.HCl (3 g.) refluxed 3 hrs. in 30 cc. glacial AcOH, cooled, and the ppt. recrystd. from AcOH gave IV.HCl. IV.HCl refluxed 1 hr. in excess Ac_2O and NaOAc, sapond., and the product recrystd. from C_6H_6 gave VII. Sapon. of 1 g. VII with 10 cc. 10% NaOH and 30 cc. alc. by boiling 15 min., cooling, neutralizing, and recrystg. the product from alc., gave $(p\text{-}HOC_6H_4COCH_2CH_2)_2NAc$, m. 218-19°. IV.HCl in NaOH and BzCl gave VI. IV.HCl (0.5 g.) and an equimol. amt. of I, heated with 0.6 g. CH_2O on a H_2O bath, gave II.HCl. I (1 g.), 0.6 g. $Me_2NH.HCl$, and 0.6 g. 36% CH_2O, heated 30 min. on a H_2O bath, filtered, and the product washed with alc. and recrystd. from alc. gave $p\text{-}HOC_6H_4COCH_2CH_2NMe_2.HCl$ (IX), m. 191°. IX in excess alkali with BzCl gave V. IX (1 g.), 1.25 g. $PhNHNH_2.HCl$, and 2 g. NaOAc in 45 cc. 33% AcOH heated on a H_2O bath 1 hr. gave VIII. $(PhCOCH_2CH_2)_3N.HCl$ and some $(PhCOCH_2CH_2CH_2)_2NMe.HCl$ (X) were obtained from the condensation of PhAc, CH_2O, and NH_4Cl. Heating 1 g. X with 4 mol. equivs. $2,4\text{-}Cl_2C_6H_3OH$ (XI) and 2 mol. equivs. $NaHCO_3$ gave 40-60% 2,2'-dihydroxy-3,3',5,5'-tetrachlorodiphenylmethane (XII), m. 168°

(from aq. alc.), and PhAc (recovered by steam distn.). IX (1 g.) with 4 mol. equivs. XI and 2 mol. equivs. $NaHCO_3$ gave XII and I.

Herman Skolnik

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Urea-formaldehyde condensation. II. The origin of the carbamidomethyl ether bridges. G. Zigeuner, W. Knierzinger, K. Voglar, E. Wiesenberger, and M. Sobotka (Univ. Graz, Austria). *Monatsh.* 82, 847-56(1951); cf. C.A. 45, 8000h.—$Me_2CHCH_2CONHCH_2OH$ (I) with alkali and BaCl gives bis(isovalerylaminomethyl) ether (II), m. 107°. II with 2,4-$Me_2C_6H_3OH$ (III) in alc. and H_2SO_4 gives 3,5,2-$Me_2(HO)C_6H_2CH_2NHCOR$ (IV) (R = iso-Bu), m. 95-6.5°, identical with a sample made from I and III. $(RNHCONHCH_2)_2O$ (V) (R = Et) with III in HCO_2H gives 3,5,2-$Me_2(HO)C_6H_2CH_2NHCONHR$ (VI), m. 119.5°. Phenylurea, NaOH, and paraformaldehyde in MeOH give $RNHCONHCH_2OH$ (VII) (R = Ph), m. 127°, which with III yield VI (R = Ph), m. 169°. Phenylurea, Na_2CO_3, and CH_2O give V (R = Ph), m. 182-3°, which with III gives VI (R = Ph), m. 169°, identical with that prepared from VII. $[(HOCH_2)_2N]_2CO$ with III gives $[3,5,2\text{-}Me_2(HO)C_6H_2CH_2NH]_2CO$ (VIII), m. 169° (or 120° with loss of solvent C_6H_6 and remelting at 169°). Urea with CH_2O and $Ba(OH)_2$ gives a cryst. substance (IX), m. 256° (decompn.). IX with III gives $R_2NCONHR$ (R = 3,5,2-$Me_2(HO)C_6H_2CH_2$) m. 173.5°, as well as VIII and $RNHCONH_2$ (X). $[(HOCH_2)_2N]_2CO$ with acid gives an amorphous ppt., m. 228° (decompn.) which with III gives VIII and X. **III. Methyleneureas.** G. Zigeuner, K. Voglar, M. Sobotka, and E. Wiesenberger. *Ibid.* 494-9.—$PhNHCONH_2$ with aq. CH_2O and a trace of HCl gives $[PhNHCONH]_2CH_2$ (I), needles from aq. pyridine, m. 210-11°. I with 2,4-$Me_2C_6H_3OH$ (II) in HCO_2H at 50° gives 2,4,6-$Me_2(PhNHCONHCH_2)C_6H_2OH$. Similar treatment of $(EtNHCONH)_2CH_2$ with II gives the Et analog, colorless leaves from methylcyclohexane, m. 119.5°. $(H_2NCONH)_2CH_2$ with II gives a mixt. of 1-mono- and 1,3-bis(2-hydroxy-3,5-dimethylbenzyl)ureas, so does polymeric methyleneurea (III). III with $PhNHCONH_2$ and HCl gives I. $(EtOCONH)_2CH_2$ with II gives Et (2-hydroxy-3,5-dimethylbenzyl)carbamate, m. 73°.

J. R. Leffler

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CA

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Hardening processes of phenol-formaldehyde. resins XVII. Hardening with hexamethylenetetramine. 3. A. Zinke, G. Zigeuner, G. Weiss, and E. Wiesenberger (Univ. Graz, Graz, Austria). *Monatsh.* 80, 160-9(1949).—A tribenzylamine structure is now assigned to reaction products of 2,6-$Me_2C_6H_3OH$ (I) and $(CH_2)_6N_4$ (II) previously described by Zinke and St. Pucher (*C.A.* 43, 5004i). The compd. $C_{33}H_{45}O_3N_5$ ($C_{32}H_{42}O_3N_4$ in previous article) (III), colorless, m. 177.5-8.5° with decompn. is obtained by refluxing a xylene soln. of 0.45 g. I and 1.0 g. II for 1-2 hrs., NH_3 and $MeNH_2$ being evolved, or by heating a mixt. of I and II 2-3 hrs. at 120-30°. III is regarded as a compd. of *4,4',4"-trihydroxy-3,5,3',5',3",5"-hexamethyltribenzylamine* (IV) with 1 mol. II. The compd. previously obtained by heating III with dil. H_2SO_4 and thought to be a dibenzylamine deriv. is now shown to be a salt of 1 mol. IV and 1 mol. H_2SO_4. The salt (V) ($C_{27}H_{35}O_7NS$) m. 181-2°; its structure is shown by its synthesis from 2,6,4-$Me_2(CH_2Cl)C_6H_2OH$ and NH_3 in C_6H_6 followed by treatment of the reaction product with H_2SO_4. V, prepd. in either way, gives III on neutralization with $NaHCO_3$ and treatment of the free base with II in alc. Attempts to purify the tribenzylamine base (IV) were fruitless. Crude IV, heated alone or, better, heated in mixt. with I for 2 hrs. at 160° gives *4,4'-dihydroxy-3,5,3',5'-tetramethyldiphenylmethane*. The sulfate of IV, $C_{27}H_{35}O_7NS.H_2O$ (VI), m. 181-2° with decompn., is obtained by 1-hr. refluxing of III with dil. H_2SO_4, CH_2O and 2 mols. $(NH_4)_2SO_4$ being formed. VI loses 1 mol. H_2O in vacuum at 100°; with $Ba(NO_3)_2$ it gives the nitrate of IV, $C_{27}H_{34}O_6N_2$, m. 171-2° with decompn.; and on treatment with picric acid and crystn. from C_6H_6 it gives a picrate of IV, $C_{33}H_{36}O_{10}N_4.C_6H_6$, yellow, decomps. above 100°. The *triacetate* of IV from VI, Ac_2O, and H_2SO_4 m. 143°. Cf. *C.A.* 43, 7745i; 44, 366b. A. F. S.

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Hardening processes of phenol-formaldehyde resins. XX. Hardening with hexamethylenetetramine. 5. A. Zinke, G. Zigeuner, G. Weiss, W. Schaden, and E. Wiesenberger (Univ., Graz., Austria). *Monatsh.* 81, 999–1006 (1950); cf. *C.A.* 44, 2274*d*.—The primary reaction between 2,4-$Cl_2C_6H_3OH$ (I) and $(CH_2)_6N_4$ (II) gives [3,5,2-$Cl_2(HO)C_6H_2CH_2]_2NH$ (III). A mixt. of 6 mols. I and 1 mol. II heated 3 hrs. at 125°, steam distd. to remove unreacted I and II and crystd. from EtOH-H_2O gives 66% III; shorter heating or less II yields less III. III m. 197–8°; with BzCl and NaOH it forms a tribenzoate m. 187° while with HNO_2 it gives a nitroso compd. $C_{14}H_{10}O_3N_2Cl_4$, bright yellow, m. 158.5–9.0°. The most important secondary reaction in the hardening is probably formation of [3,5,2-$Cl_2(HO)C_6H_2]_2CH_2$ (IV) while formation of yellow azomethine compds. by dehydrogenation of II occurs to a lesser degree. A mixt. of III 1 g. and I 1.77 g. heated 3½ hrs. at 190–200° in CO_2 ives IV while both IV and III result from heating 12 mols. and 1 mol. II 1–2 hrs. at 180°. From 3,4-$Me_2C_6H_3OH$ V) 5.3 g. and III 0.8 g. reacting 3 hrs. at 130–40°, NH_3 and .2'-dihydroxy-3,5-dichloro-3',4'-dimethyldiphenylmethane (VI) m. 186° are obtained. A mixt. of 1.5 g. I and 1 g. [3,5,2-$Me_2(HO)C_6H_2CH_2]_2NH$ heated 10 hrs. at 130° lso gives VI. Yellow azomethine compds. analogous to those obtained in the reaction of V and II (*C.A.* 44, 306–367) are probably formed from I and II in small amt. even at 125°. The product of reaction of 1 mol. I and 1 mol. II at 125°, when refluxed with EtOH and HCl, gives 2,3,5-$HOCl_2C_6H_2CHO$ (VII) m. 95°. VII forms a 2,4-dinitrophenylhydrazone, orange red, m. 286–7° and identical with the same deriv. prepd. from the aldehyde obtained from I by the Tiemann-Reimer reaction. A. F. Shepard

CA

3/

Urea formaldehyde condensation products. I. The action of 2,4-dimethylphenol on urea-formaldehyde condensation product. G. Zigeuner. *Monatsh.* 82, 175 (1951); cf. *C.A.* 44, 8805. —The high-mol. urea-HCHO condensation product is probably —OCH$_2$NHCONHCH$_2$OCH$_2$NHCONHCH$_2$O—. It is cleaved by 2,4-dimethylphenol in acid to *N,N'*-bis(2-hydroxy-3,5-dimethylbenzyl)urea.

J. B. Leffler

CA

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Hardening processes of phenol-formaldehyde resins. XXIII. Hardening with hexamethylenetetramine. 7. G. Zigeuner and O. Gabriel (Univ. Graz, Austria). *Monatsh.* 81, 952-3(1950); cf. *C.A.* 45, 2258h.—Up to 90% yield of 2,2'-dihydroxy-3,6,3',6'-tetramethyldibenzylamine (I) is obtained by heating $(CH_2)_6N_4$ with 2-6 mols. 2,5-$Me_2C_6H_3OH$ (II). I forms no tribenzylamine deriv. when heated with II, but instead gives the trinuclear compd. 2,3,6-$HO(Me)_2C_6H_2CH_2NHCH_2C_6HOH(Me)_2$(2,3,6-$HO(Me)_2$-$C_6H_2CH_2$)-2,3,6,5 when heated either with II or with 2,4-$Me_2C_6H_3OH$. III has mol. wt. 435, contains 3.1% N and turns red with $FeCl_3$ in dioxane. While I is unaffected by prolonged heating in PhOAc soln. it loses 10% of its N when heated alone 4 hrs. at 180° and then contains azomethine linkages, the presence of the latter being shown by formation of an aldehyde on hydrolysis. A. F. Shepard

YUGOSLAVIA

POP-CENIC, S.; PUJIN, D.; ZIGIC, B.; SESTAK, V.; PUACA, V. and VUCKOVIC, M.
FABEG, Belgrade; Veterinary Center (Veterinarski centar) Sombor; ZZ [Acronym not identified], Kolut; IPK [acronym not identified] "Vrbas", Animal Feed Factory (Fabrika stocne hrane) Vrbas; and PD [acronym not identified] "Elan" Srbobran.

"Effect of Vigofac in Fattening Swine with Varying Levels of Animal and Plant Proteins in their Feed."

Belgrade, Veterinarski Glasnik, Vol 19, No 12; 1965; pp 925-929.

Abstract [English summary modified]: Study of Pfizer's animal feed additive Vigofac in 7 groups totaling 64 pigs. Improvement in body weight and feed use efficiency was pronounced on animals reciving marginally adequate feed, but was least in those receiving good rations. Three tables, 1 Yugoslav and 3 Western references; ms rec 2 Nov 65.

1/1

KOVACEVIC, M.; MILUTINOVIC, R.; KONJOVIC, M.; ZIGIC, M.

Our experience with the treatment of pulmonary tuberculosis resistant to classical tuberculostatic drugs. Tuberkulosa 15 no.2:250-253 Ap-Je '63.

1. Gradska bolnica za grudobolne grada Beograda, Bezanijska Kosa - Upravnik: prim. dr Ljubisa Ilic.

(TUBERCULOSIS, PULMONARY)
(DRUG RESISTANCE, MICROBIAL)
(ISONIAZID) (STREPTOMYCIN)
(AMINOSALICYLIC ACID)
(ANTITUBERCULAR AGENTS)

5

ZIGLIN, L. A., KRUPENNIKOV, G. A., and FURSIN, I.

"Mining Conditions in the Moscow Basin," Ugol', No.12, 1952
Translation W-26548, 2 Jun 53

1. KRUPENNIKOV, G. A., ZIGLIN, L. A.

2. USSR (600)

4. Coal-Mining Machinery

7. Results of industrial tests with the mobile mechanized mine shield model Shch-50 in the Moscow coal basin. Ugol' 27, no. 12, 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

ZIGLING, L.V.; Prinimali uchastiye: BERMAN, M.A., vrach; GROSSMAN, I.I., vrach; GOLUBEVA, N.S., vrach; SEMENOVA, A.V.

Clinical aspects and diagnosis of epidemic hepatitis in adults in Leningrad. Trudy LPMI 30:40-53 '63. (MIRA 18:3)

1. Bol'nitsa imeni S.P.Botkina v Leningrade (glavnyy vrach M.M. Figurina, nauchnyy rukovoditel' prof. Ye.S.Gurevich).

ZIGMANTOVICH, M.; SHUSTER, I.

Using natural gasoline to improve automobile fuel quality. Avt. transp.33 no.9:20-21 S'55.
(MLRA 8:12)

1. Kuybyshevskoye tovarno-transportnoye upravleniye Glavneftesbyta (for Zigmantovich) 2. Kuybyshevskiy oblastnoy avtotrest (for Shuster)
(Gasoline)

ZIGMUND, F.F.

Sverdlov, A. B., Zigmund, F. F. and Nesmelov, V. V. "On the problem of extracting lanolin from the rinsing water of the Kazansk fur combine," Trudy Kazansk. khim-tekhnol. in-to im. Kirova, Issue 13 1948, p. 85-89

SO: U-3264, 10 April 1953, (Letopis 'Zhurnal 'nykh Statey, No. 3, 1949)

Zigmund, F.F.

Category : USSR/Atomic and Molecular Physics - Heat D-4

Abs Jour : Ref Zhur - Fizika, No 3, 1957, No 6328

Author : Zigmund, F.F.

Title : Effect of the Direction of a Stream of Liquid on the Temperature Distribution in Heat Exchange Apparatus.

Orig Pub : Tr. Kazansk. khim.-tekhnol. in-ta, 1955, vyp. 19-20, 381-420

Abstract : No abstract

Card : 1/1

ZIGMUND, F.F., kand. khim. nauk; VACHAGIN, K.D., inzh.

Studying the characteristics of thermoplastic coatings. Khim. mashinostr. no.1:34-36 Ja'63
(MIRA 17:7)

ZIGMUND, F.F.

Calculating temperature elongations in double circulation recuperators. Izv. vys. ucheb. zav.; chern. met. 6 no.9:202-208 '63.
(MIRA 16:11)

1. Kazanskiy khimiko-tekhnologicheskiy institut.

KASIMOV, B.S.; ZIGMUND, F.F.

Free flow of thin films of viscous liquids on a vertical surface. Inzh.-fiz. zhur. 6 no.11:70-75 N '63. (MIRA 16:11)

1. Khimiko-tekhnologicheskiy institut, Kazan'.

S/184/63/000/001/004/005
A059/A126

AUTHORS: Zigmund, F. F., Candidate of Technical Sciences, Vachagin, K. D., Engineer

TITLE: Analysis of the properties of protective coatings based on thermoplastics

PERIODICAL: Khimicheskoye mashinostroyeniye, no. 1, 1963, 34 - 36

TEXT: The properties of sprayed-on thermoplastic protective coatings were examined in the laboratory of the kafedra protsessov i apparatov (Department of Processes and Apparatus) of the Kazanskiy khimiko-tekhnologicheskiy institut (Kazan' Institute of Chemical Technology). Polyethylene, polystyrene, graphite, carbon black, talc, alloy АБ-70 (AB-70) (Shigurovo bitumen mixed with Sadkino asphaltite), and aluminum powder were used as the coating materials. The spraying device was much more efficient and simple than that designed by the VNIIAvtogen, and consisted of one bottle filled with oxygen, another filled with nitrogen, and a standard gas burner ГСН-53 (GSN-53) connected to the gas mains. Sieve fractions between 0.25 and 0.05 mm were used. Optimum crushing

Card 1/2

SOV/124-57-8-9108

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 8, p 76 (USSR)

AUTHOR: Zigmund, F.F.

TITLE: Analytical Calculation of the Isothermal Temperature Difference in Multiple-pass Heat Exchangers (Analiticheskiy raschet izotermicheskoy raznosti temperatur v mnogokhodovykh teploobmennikakh)

PERIODICAL: Tr. Kazansk. khim.-tekhnol. in-ta, 1955, Nr 19-20, pp 99-107

ABSTRACT: An examination of the problem of analytical methods for the determination of the design temperature stress for multiple-pass heat exchangers. The problem reduces to the determination of the coefficient of isothermicity, i.e., a factor by means of which the available temperature stress is transformed into the effective one. The author examines heat exchangers with parallel fluid flow, with multiple cross-flow circulation of the shell fluid, and of the multipass battery type. Calculation formulas are given for each case, and examples are adduced to illustrate the calculation procedure. Bibliography: 9 references.

Card 1/1

A. A. Gukhman

Zigmund, F. F.

USSR/Fluid Mechanics. Heat Transfer

Abs Jour: Ref Zhur-Mekhanika, No 6, 1957, 6854

Author : Zigmund, F. F.
Inst :
Title : The influence of the direction of fluid flow on the temperature conditions in heat exchangers.

Orig Pub: Tr. Kazansk. khim.-tekhnol. in-ta, 1955, vyp. 19-20, 381-420

Abstract: The temperature conditions in heat exchangers under constant aggregate heat carrier conditions are studied. A classification of heat exchangers is made, with respect to the nature of the heat-carrier flow and with respect to the construction of the heat exchangers. Specific constructions and conditions for their efficient use are analyzed. Calculation formulas and specific examples of the calculation of the mean temperature difference for various construction types of heat exchangers are given. For the sake of simplification of calculations, the

Card 1/2

USSR/Fluid Mechanics. Heat Transfer

Abs Jour: Ref Zhur-Mekhanika, No 6, 1957, 6854

Abstract: "isothermicity factor" is introduced, which, multiplied by the difference of the initial fluid temperatures, gives the value of the mean temperature difference. Auxiliary graphs are constructed for the determination of the "isothermicity factor" with respect to the initial and final temperatures of the heat carriers for various designs of heat exchangers. Examples of calculations and auxiliary graphs are given for the design of heat exchangers with complex flow systems, and also for heat exchangers in which one of the fluid is stationary and for heat exchangers with concentric coils.

Card 2/2

ZIGMUND, F.F.

Calculation of heat transfer in a nonsteady process. Trudy KKHTI no.16:43-51 '51 [Publ. '52]. (MIRA 12:12)
(Heat--Transmission)

IL'IN, Boris Afanas'yevich; ALYSHEV, I.F., dots., kand. tekhn. nauk, retsenzent; ZIGMUND, F.F., inzh., retsenzent; KORCHUNOV, N.G., prof., otv.red.; MATVEYEVA, V.V., red.; URITSKAYA, A.D., tekhn.red.

[Land transportation of timber] Sukhoputnyi transport lesa; uchebnoe posobie dlia studentov lesokhoziaistvennogo fakul'teta. Leningrad, Vses. zaochnyi lesotekhn. in-t, 1961. 210 p. (MIRA 15:11)

(Lumber--Transportation)

CHASOVSKIY, Y.Z.; ZIGMIND, F.F.

Process of mixing by means of mechanical agitators when a certain amount of heat is being transmitted through the stirred mass. Trudy KKHTI no.30:315-328 '62.

Effectiveness of mixing by means of mechanical agitators under anisothermal conditions. 329-340 (MIRA 16:10)

Zigmund, F. F.

USSR/Fluid Mechanics

Abs Jour: Ref Zhur Mekhanika, No 8, 1957; 9108

Author : Zigmund, F. F.

Inst :

Title : An analytical calculation of the isothermal temperature difference in multi-pass heat exchangers.

Orig Pub: Tr. Kazansk, khim.-tekhnol. in-ta, 1955, vyp. 19-20, 99-107

Abstract: The problem of an analytical method of determining the mean rated temperature difference for multi-pass heat exchangers is investigated. The problem reduces to finding a coefficient of isothermicity, i.e., a factor which would convert the available temperature difference into an effective difference. Cases of heat exchangers with parallel fluid flow, with multi-stage cross-flow circulation of the inter-tube fluid, and of exchangers of the multi-pass battery type are discussed. For all cases, design formulas are given, and

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ZIGMUND, F. F.

"Design of crystallizers with air-cooling."

Report presented at the 1st All-Union Conference on Heat- and Mass- Exchange, Minsk, BSSR, 5-9 June 1961

S/170/62/005/004/008/016
B111/B102

AUTHORS: Kasimov, B. S., Zigmund, F. F.

TITLE: Rules governing the flow of films in a vertical cylindrical tube

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 5, no. 4, 1962, 71 - 74

TEXT: The stationary flow of single and two-phase viscous films under the effect of the force of gravity is studied. It is found that the film thickness increases with the path of flow. Consequently, the mean velocity of the liquid decreases. The problem is dealt with by two different methods: (1) by assuming that the velocity profile is parabolic over the film thickness, and (2) without simplifications. In the former case, the function $\delta = f(x)$, i.e., the increase of the film thickness, is given as a function of the path of flow with reference to V. G. Levich (Ref. 9: Fiziko-khimicheskaya gidrodinamika (Physicochemical Hydrodynamics), Fizmatgiz, 1959). It is a complex rational function linear in first approximation. In the latter case, the solutions of the Navier Stokes equation and of the continuity equation v_x and v_y are expanded in power

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series and broken off after the fourth term. The formulas show that both single and two-phase flows have only an approximately parabolic velocity profile. The solutions obtained agree with the experiments by H. Brauer (Ref. 3: VDJ, Forschungsheft 457, 22, 17, 1956) and Th. Sexauer (Ref. 4: Forschungs, 10, H.6, 295, 1954). There are 10 references: 3 Soviet and 7 non-Soviet. The three references to English-language publications read as follows: A. E. Dukler, O. P. Bergelin, Chem. Engin. Progr., no. 11, 1952; A. E. Dukler, Chem. Engin. Progr., no. 10, 1959; I. W. Dunning et al. US Patent 277924.

ASSOCIATION: Khimiko-tekhnologicheskiy institut imeni S. M. Kirova, g. Kazan' (Institute of Chemical Technology imeni S. M. Kirov, Kazan')

SUBMITTED: April 10, 1961

KASIMOV, B.S.; ZIGMUND, F.F.

Laws governing the flow of a film on a vertical cylindrical tube; single-phase flow. Inzh.-fiz.zhur. 5 no.4:71-74 Ap '62. (MIRA 15:4)

1. Khimiko-tekhnologicheskiy institut imeni S.M.Kirova, Kazan'. (Hydrodynamics)

S/123/61/000/013/025/025
A052/A101

AUTHOR: Zigmund, F. F.

TITLE: Calculation of temperature stresses in heat-exchange equipment

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 13, 1961, 9, abstract 13Kh47 ("Tr. Kazansk. khim.-tekhnol. in-ta", 1960, no. 29, 168-169)

TEXT: It is reported that on the basis of theoretical studies of the general distribution laws of temperatures in the flows, circulating in a system, equations and formulae are derived, which make it possible to plot the temperature curves of the flows and to find, on this basis, the maximum temperature stresses in the elements of heat-exchange equipment.

O. Tolkova

[Abstracter's note: Complete translation]

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SVERDLOV, A.B.; ZIGMUND, F.F.; NESMELOV, V.V.

Extracting lanolin from wash water of the Kazan Fur Combine. Trudy KKHTI no.13:85-89 '48. (MIRA 12:12)

1.Kazanskiy khimiko-tekhnologicheskiy institut im. S.M. Kirova, kafedra obshchey khimicheskoy tekhnologii.
(Kazan--Wool-fat)

ZIGMUND, F.F.

Dimensionless equations of heat exchange in current and countercurrent flow of liquids. Trudy KKHTI no.15:89-103 '50. [publ. '51] (MIRA 12:12)
(Heat--Transmission)

ZIGMUND, F.F.; SHVETSOV, V.A.

Recovery of solvents in industrial enterprises with the method of two-phase adsorption. Lakokras.mat.i ikh prim. no.2:65-66 '62. (MIRA 15:5)

(Painting, Industrial--Equipment and supplies)

ZIGMUND, F.F.

Problem of cleaning ash-rich peat during pressing. Trudy KKHTI
no.15:104-108 '50. [publ. '51] (MIRA 12:12)
(Kazan--Peat)

ZIGMUND, F.F.

[redacted]

Graphical analysis for the calculation of the average temperature difference in multiple-pass heat exchangers. Trudy KKHTI no.17: 72-80 '52 [publ. '53]. (MIRA 12:11)

(Heat exchangers)

ZIGMUND, F.F.

Optimum grouping of battery heat exchangers. Trudy EKHTI no.12:113-122 '53 [publ. '54]. (MIRA 12:11)

(Heat exchangers) (Heat--Transmission)

ZIGMUND, F.F.

Determining average temperatures in a nonsteady process. Trudy KKHTI no.18:182-188 '53 [publ. '54]. (MIRA 12:11)
(Heat exchangers) (Heat--Transmission)

ZIGMUND, F.F.

Means of increasing the heating efficiency of multiple-pass heat exchangers. Report No.1. Apparatuses with an invariable direction of fluid flow between pipes. Trudy KKHTI no.18:189-212 '53 [publ. '54]. (MIRA 12:11)

(Heat exchangers) (Heat--Transmission)

ZIGMUND, F. F.

"Kinetic equations of air evaporation cooling."

report submitted for 2nd All-Union Conf on Heat & Mass Transfer, Minsk, 4-12 May 1964.

Kazan' Chemical Technology Inst.

BLINOV, O.S.; BELEN'KIY, Ye.L.; BRAUSEVICH, S.T.; DOROKHOV, B.A.; ZIGMUND, F.R.; ITSIKOV, G.B.; LEVER, A.A.; LESHCH-BORISOVSKIY, A.I.; MURTUZALIYEV, S.A.; PIIR, A.I.; YUZIKHIN, Ye.Ye.; YAKIMOV, I.D.; SHCHELKUNOV, V.V., retsenzent; GONCHAROV, A.F., otv. red.; KORCHUNOV, N.G., otv. red.; NIKOL'SKIY, B.V., otv. red.; POSTREMOV, G.A. [deceased]; SLUTSKER, M.Z., red. izd-va; SHIBKOVA, R.Ye., tekhn. red.

[Lumbering; land transportation of timber] Lesozagotovki; sukhoputnyi transport lesa. Spravochnik. Moskva, Goslesbumizdat, 1962. 504 p. (MIRA 16:7)
(Lumber—Transportation)

Zigmund, J.

Mechanization of large repair works. p. 89.

(Vol. 5, no. 2, Feb. 1955.)
(Resolution adopted at the meeting of active workers of the chemical industry, February 5, 1955, in Prague. p. 45.)
(Excerpts from an address delivered by J. Pucik, Minister of the Chemical Industry. p. 47.)

CHEMICKY PRUMYSL

SO: Monthly List of East European Accession, (EEAL), LC, Vol. 4, No. 9, Sept. 1955, Uncl.

L 33693-66 EWP(j) RM

ACC NR: AP6024210 SOURCE CODE: CZ/0043/65/000/011/0854/0859

AUTHOR: Zigmund, Miroslav (Engineer; Candidate of sciences; Bratislava); Foniok, Rudolf (Engineer; Bratislava); Valent, A. (Graduate chemist; Bratislava)

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B

ORG: Institute of Inorganic Chemistry, Slovak Academy of Sciences, Bratislava (Ustav anorganickej chemie Slovenskej akademie vied)

TITLE: Titanium chloro complexes (1.) synthesis of the complex [Ti Cl sub 3 py sub 3]

SOURCE: Chemicke zvesti, no. 11, 1965, 854-859

TOPIC TAGS: complex compound, organotitanium compound, pyridine, chemical reactor, chemical synthesis

ABSTRACT: Yield of the solid complex [Ti Cl_3 py_3] by the reaction of the alpha form of titanium chloride with pyridine dissolved in hexane was studied in a laboratory reactor at 20°C. The influence of molar ratios, pyridine concentration, method of mixing and residence time was investigated. Best results were obtained when molar ratio of pyridine to chloride was 3:1, pyridine concentration in hexane was 1.0-1.2M, and the reaction time was 1 hour. 98% yield was obtained. Orig. art. has: 2 figures. [JPRS]

SUB CODE: 07 / SUBM DATE: 24Jul65 / ORIG REF: 004 / SOV REF: 000

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L 33230-66 EWP(e) WH

ACC NR: AP6023845 SOURCE CODE: CZ/0043/65/000/009/0723/0726

/6

AUTHOR: Zikmund, Miroslav (Engineer; Candidate of sciences; Bratislava); Foniok, Rudolf (Engineer; Bratislava); Valent, Aladar (Graduate chemist; Bratislava) B

ORG: Institute of Inorganic Chemistry, Slovak Academy of Sciences, Bratislava (Ustav anorganickej chemie Slovenskej akademie vied)

TITLE: Laboratory rotating sphere reactor for the preparation and milling of substances in a controlled atmosphere

SOURCE: Chemicke zvesti, no. 9, 1965, 723-726

TOPIC TAGS: chemical reactor, laboratory glassware

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ABSTRACT: The reactor is made of glass; the atmosphere which is controlled may be either liquid or gaseous; the rotation provides mixing and milling of both the raw materials and the reaction product. The presence of the glass balls in the reactor prevents precipitation of deposits on the walls of the reactor. The apparatus was constructed by F. Kost. Orig art. has: 1 figure [JPRS]

SUB CODE: 07, 14 / SUB DATE: 10May65 / OTH REF: 004

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15 82

ZIKMUND, M.

ZIKMUND, M.

A few remarks on the terminology of inorganic substances.

P. 242 (Chemicke Zvesti) Vol. 11, No. 4, Apr. 1957, Czechoslovakia

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (EEAI) LC. - VOL. 7 NO. 1, JAN. 1958

ZIKMUND, M.

A microcell for oscillographic polarography.

P. 310. (CHEMICKE ZVESTI) (Praha, Czechoslavakia) Vol. 11, no. 5, May 1957

SO: Monthly Index of East European Accession (EEAI) LC, Vol. 7, No. 5, May 1958

ZIKMUND, M.

ZIKMUND, M.

A national conference on inorganic chemistry.

P. 449 (Chemicke Zvesti) Vol. 11, No. 7, Aug. 1957, Czechoslovakia

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (EEAI) LC. - VOL. 7, NO. 1, JAN. 1958

ZIKMUND, M.

ZIKMUND, M.

A proposal concerning the nomenclature of inorganic substances.

P. 466 (Chemicke Zvesti) Vol. 11, No. 7, Aug. 1957, Czechslovakia

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (EEAI) LC. - VOL. 7, NO. 1, JAN. 1958

ZIKMUND, M.

J. Moravec's Anorganicka chemie (Inorganic Chemistry); a book review.

p. 778 (CHEMICKE LISTY) Vol. 51, no. 4, Apr. 1957,
Praha, Czechoslovakia

SO: Monthly Index of East European Accessions (EEAI) LC, Vol. 7, No. 3,
March 1958